

the rotatable disc **56** via force **F** without actuating the control function of the disc and without having to move their fingers to try and avoid it. As should be appreciated, a user generally needs to apply a rotary motion to the rotatable disc **56** to get it to implement the control function and thus it tends not to implement the control function when the user clicks substantially through its axis **57**.

[0039] In addition, the rotatable disc **56** may be positioned relative to any portion of the body **54** (e.g., sides, top front, back, etc.). In the illustrated embodiment, the rotatable disc **56** is seated at a front portion **60** of the body **54**. Moreover, the rotatable disc may be configured to help define the shape and/or form of the mouse **50**. For example, as shown in FIG. 3, the top surface or engageable surface **64** of the rotatable disc **56** is contoured to the shape of the front portion **60** of the body **54**. In most cases, the top surface **64** is completely exposed to the user, i.e., the top surface **64** is not covered by a portion of the body **54**.

[0040] The rotatable disc **56** may also include tactile features **62**, which provide tangible surfaces that help the user manipulate the rotatable disc (e.g., allow the user to more easily grip the disk with a finger) and that inform the user of its rotatable position during rotation thereof. The tactile features **62** may be widely varied. For example, the tactile features **62** may be bumps, knurls, recesses, cavities and/or the like. The tactile features **62** should be least obtrusive surface as possible while still allowing the user to grip the disc. In most cases, the tactile features **62** are disposed around the outer periphery of the disc **56**. This configuration informs the user where the edge of the rotatable disc **56** is when using the rotatable disc **56**. By being at the edge, the user may supply the greatest amount of torque for moving the rotatable disc **56** about the axis **57**. The center of the rotatable disc **56** is generally smooth like the rest of the mouse surface, i.e., the external surface of the body. In the illustrated embodiment, the tactile features **62** are bumps that extend above the top surface **64** of the scroll wheel **56**. This allows the rotatable disc **56** to be felt by one or more fingers of the user.

[0041] Referring to FIG. 6, the entire top surface **54** of the rotatable disc **56** is advantageously accessible to the user's fingers. This configuration generally allows the rotatable disc **56** to be easily manipulated by one or more fingers when the palm side surface of the hand is placed on the back portion **58** of the body **54**. For example, the thumb **80** and two rightmost fingers **82** (or leftmost fingers if left handed) are used to grip the sides **84** of the body **54** while the two remaining fingers **86** (either by themselves or in combination) are used to manipulate the rotatable disc **56**. As shown, the rotatable disc **56** can be continuously rotated by a simple swirling motion of the finger **86**, i.e., the disc **56** can be rotated through 360 degrees of rotation without stopping. In addition, the user can pull or push on the disc tangentially from all sides of the rotatable disc **56**. For example, the rotatable disc **56** may be manipulated forwards and backwards as shown by arrows **88** and side to side by arrows **90**.

[0042] FIG. 7 is a side elevation view, in cross section, of a mouse **100**, in accordance with one embodiment of the present invention. By way of example, the mouse **100** may generally correspond to the mouse **50** shown in FIGS. 2-4, 7 and 8. For example, the mouse **100** generally includes a base **102**, a body **104** and a disc **106** that may correspond to

the base **52**, body **54** and disc **56** of the mouse **50**. In general, the base **102** and the body **104** form the housing for the mouse **100**. As such, the base **102** and body **104** enclose a plurality of internal components **108**, which provide different functions for the mouse **100**. These components may be electrical and/or mechanical components. For the sake of clarity, not all of the internal components are shown in FIG. 5. In one embodiment, the electronic components of the mouse **100** are disposed on a printed circuit board (PCB) **110**, which is mounted to the base **102**.

[0043] Broadly, the base **102** provides a platform for sliding the mouse **100** along a surface and for supporting the other components of the mouse **100**, as for example, the internal components **108**, the body **104** and the disc **106**. The body **104**, which is pivotally coupled to the base **102**, provides a clicking action for selecting and executing actions on the GUI. As should be appreciated, the body **104** is the button of the mouse **100** and therefore the body has no separate mechanical buttons disposed thereon. While the body **104** has no buttons, it does support the disc **106** thereon. The disc **106** is rotatably coupled to the body **104**. The disc **106** may provide a scrolling feature. Because the scroll disc **106** is coupled to the body **104**, it moves with the body **104** when the body **104** is pivoted with respect to the base **102**, i.e., during the clicking action.

[0044] More specifically, the body **54** includes an inner shell **112** and an outer shell **114**. The outer shell **114** is structurally coupled to the inner shell **112**. The means for coupling the outer shell **114** to the inner shell **112** is not shown herein, however, any suitable coupling means may be used. By way of example, the outer shell **114** may be coupled to the inner shell **112** via fasteners such as snaps, screws, glues and the like. Alternatively, the inner and outer shell **112**, **114** may be integrally formed from a single piece of material.

[0045] The inner and outer shells **112**, **114**, as well as the base **102**, are generally formed from a suitable material such as plastic. In one implementation, the outer shell **114** is formed from a translucent material so that the inner shell **112** may be visible to a user. As shown, the inner shell **112** is disposed between the base **102** and the outer shell **114**. As such, the inner shell includes a top surface **116**, which substantially faces the inner surface of the outer shell **114** and a bottom surface **118** that substantially faces the base **102**. In one embodiment, the inner shell **112** is configured to cover the electronic components disposed on the PCB **110**.

[0046] The inner shell **112** is pivotally coupled to the base **102** via a pivot **120** located towards the rear of the mouse **100**. By way of example, the pivot **120** may include a pivot support attached to the base **102**, and the inner shell **112** may include an internal pivot pin for mating with an opening in the pivot support. The pivot **120** allows the body **104** to swing (as shown by arrow **122**) between an unclicked position, placing the body **104** away from the base **102**, and a clicked position, placing the body **104** towards the base **102**. In the clicked position (e.g., when a downward force is applied to the body **102**), the inner shell **112** is configured to engage a switch **124**, which is mounted on the PCB **110** and which is located opposite the pivot **120**. That is, during the clicking action, a bottom portion **126** of the inner shell **112** is pushed against an actuator **128** of the switch **124** thereby activating the switch **124**, i.e., the actuator **128** is configured